



Office of Business Transformation

CMO Point Paper

Art of the Possible – The ERP
Enabled Integrated Management
System

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1 Executive Overview

The purpose of this paper is to engender broad understanding of how a well-executed ERP strategy can enable an integrated management system that transforms Army business operations. Like other organizations that have successfully implemented a world-class integrated management system, the Army must leverage its profound investment in ERP platforms as an enabling technology that provides a foundation for execution and promotes faster, better decision making.

2 What is an Integrated Management System?

2.1 How the Army Defines an Integrated Management System

As defined in the Army's February Report to Congress on Business Transformation, the term "integrated management system" represents how the Army generates end-to-end and top-to-bottom, the most capable and ready Army for the warfighter at best value. A well-executed integrated management system (IMS) will ensure the Army works toward a common purpose, across lifecycle management functions, through and across organizational layers, and incorporates efficiency, effectiveness and value trade-offs at every level. An integrated approach to Army business management ensures that decision makers are better informed because they have a *routine*¹ means to collaborate on common issues generated by or affecting Army business operations.

2.2 Integrated Management Systems in the Private and Government Sectors

Most large corporations, state governments, and academic institutions face similar challenges as the Army. Like the Army, many respond by focusing on implementing an integrated management system that improves enterprise processes, stresses corporate governance, and consolidates their information technology (IT) platforms. Drawing on research into the IT practices of over 100 companies, recent studies² stress the importance of establishing a single IT platform to support integrated business operations.

As an example, Lou Gerstner recognized that IBM had to refocus and realign its operations toward a simpler model based on a few key processes and supported by a drastically reduced set of IT systems based upon the SAP ERP. Similarly, the US Army Armament Research, Development and Engineering Center (ARDEC) transformed itself into a world-class organization by creating a clear, comprehensive vision of desired results and changed its operating model including its core business processes and organizational structure. The result? Using a SAP-provided ERP as the basis for their digitized platform, ARDEC reduced its operating costs by \$57 million, moved 800 FTE from G&A to core mission functions, and shut down 120 plus legacy systems within three years.

¹ Standardized operations performed in a distributed manner throughout the Army by rote or habit

² "IT Savvy: What Top Executives Must Know to Go from Pain to Gain" by Peter Weill, Jeanne W. Ross, 2009, HBS Press Book

2.3 Enabling Integrated Management

In pursuit of a world-class integrated management system, the Army should follow the successful examples cited above by ensuring it identifies and communicates high-level, end-to-end business processes and an enabling technology platform that provide a foundation for execution of its operating model. Like culture and organization, an enterprise's core business processes and information technology platform - if "locally optimized" at the expense of the enterprise - can severely hinder operational effectiveness. It is through changes to the operating model, engaged governance, and a well-conceived technology platform the Army's integrated management approach will promote collaboration, foster innovative Army-wide solutions and promote faster, better decision making.

3 ERP as a Foundation for Execution

3.1 Technology as Both Driver and Enabler of Change

Earlier point papers have described the role of end-to-end (E2E) processes and the role of robust governance as enablers of transformation. While both of these are important, they are also insufficient to the development and implementation of an integrated management system that transforms business operations. However, when combined with a technology platform such as an enterprise resource planning (ERP) system, they become both drivers and enablers of transformation. Why? Because implementing a technology platform such as an ERP throughout the enterprise necessarily drives an organization to look at itself holistically through the lens of end-to-end processes.

The ERP is also an enabler of an integrated management system by supporting business rules and referentially correct data that greatly lower the barrier to achieving a world class business management. Because it is primarily a large integrated database environment an ERP platform consolidates, rationalizes and enables decision makers to exploit operationally-generated data within seconds, not weeks or months, shortening drastically, and thereby facilitating Army adoption of an effective plan-do-check-act cycle for performing business operations.

3.2 The ERP Platform as "City Plan"

Enterprises, like cities, grow and evolve principally by "topsy" or they are planned. In the former case, they evolve into a collection of slums with poor infrastructure, non-standard appearance and a continuing downward spiral. In the latter, inhabitants are provided well-designed infrastructure, aesthetic surroundings and a platform for further growth in size, commerce and quality of life. The Army business system landscape has evolved essentially along the former path with disjointed processes, numerous heterogeneous systems and non-standard data.

In many ways, the ERP solution architecture compares to a city plan or to the plan of the Washington Area Metro System architecture. Pierre L'Enfant developed his solution architecture for the city of Washington D.C. in the 18th century. Depicted in the figure below, L'Enfant's Washington city with its familiar avenues and circles took years to complete, but the build out (configuration) remained faithful to the original layout.

The ERP's solution architecture is analogous to L'Enfant's plan in that it provides an extensive framework for building out the Army's integrated management system enabled by a single digitized platform of integrated processes and data.

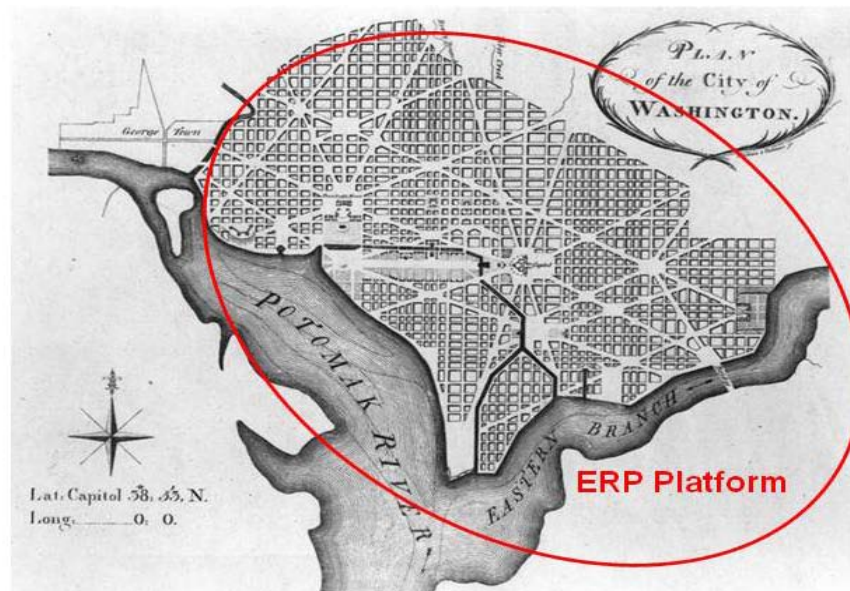


Figure 1, L'Enfant Plan for Washington City

3.3 The ERP Platform as “Solution Architecture”

The Army's investment in ERP platforms provides us, at no extra cost, a solution architecture that addresses all processes and master data the Army needs to support a single integrated management system. The ERP also provides capabilities for coexisting with legacy systems and data. In short, the ERP platform provides a single solution architecture that can be used to describe, prescribe, and extend a single digitized platform enabling the transition of legacy systems and data to a single integrated framework capable of supporting most business operations today.

Just as when L'Enfant developed his plan, a number of neighborhoods already existed. The development of the District of Columbia continued to take place around existing neighborhoods, or, in some cases, they were replaced. Implementation of an integrated management system enabled by a digitized ERP platform must proceed in a similar manner.

3.4 The Current Approach to ERP Strategy – Why We must Change

Historically, the Army's approach to ERP implementation has been to break the ERP platform apart and to implement a functional slice within each of the logistics and financial management communities. Worse yet, the logistics community developed one ERP platform for national logistics and a separate ERP platform for tactical Army logistics. This is akin to L'Enfant designing a house with the plumbing in one room, the electrical in another, and the HVAC in yet a third room all tied together by integration “fixes.” As with the design of a house, ERP platforms only work when implemented holistically with all the parts seamlessly configured together.

Since 2007, the Government Accountability Office (GAO) and the Business Transformation Agency (BTA) have pointed out the flaw in the Army’s approach to implementing ERP platforms, most notably potential interoperability and integration issues. Despite these in-depth studies from independent entities, the Army has elected to continue with a strategy of federation featuring multiple ERPs made to work together through extraordinary means. However, even if the required interfaces and workarounds are made to work properly, the prospect for significant O&M costs due to the sheer number of reconciliations over the lifecycle of the systems is significant.

3.5 Example – Integrated Force Management

The SAP ERP platform provides support capabilities closely aligned to the Army’s core operating model (ARFORGEN) for generating and sustaining combat forces employed by the COCOMs. As it has done for other industries, SAP developed an industry solution designed to support defense forces public security (DFPS). In addition to processes and functions specific to force generation, the ERP platform also provides two invaluable capabilities: force element and disconnected operations.

Represented in the figure below, force element is a construct for organizing key data about forces and consolidating it in one database. Properly implemented, force element enables the Army to manage all authorization and on-hand data for its combat units, both current and future in one place. Furthermore, because the data structure can be extended, every billet (equipment and personnel) associated with any unit can be managed individually—what is authorized and the identification number of the actual item that fills that authorization.

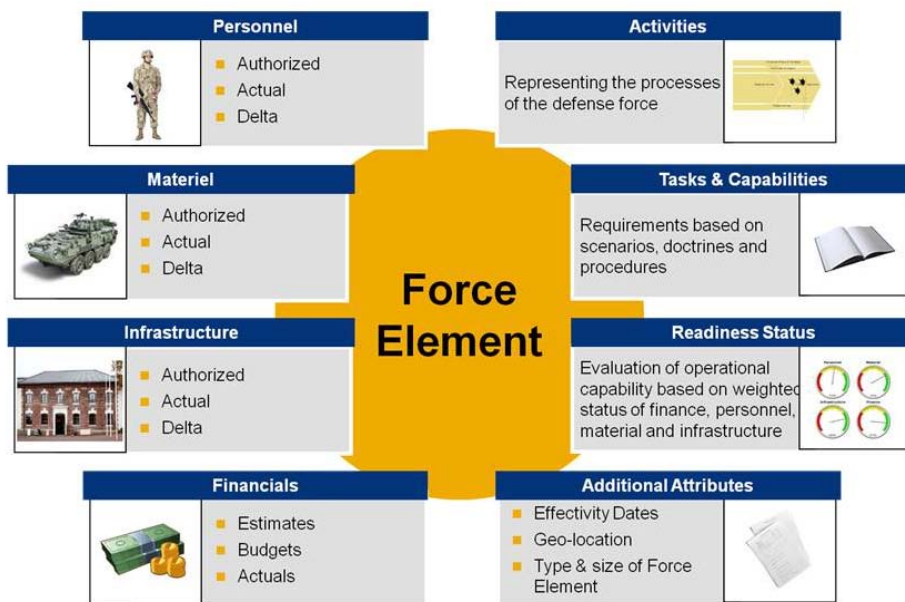


Figure 2, Force Element Example

A key feature of the SAP ERP platform are ‘disconnected operations’ capabilities involving the dispatch of sub-sections of a force, sustaining that element and then reinstating it back into the ERP database, almost seamlessly. Thus, a force element can be detached for hurricane relief or to support a COCOM while supporting logistics are rearranged and the financials are properly posted. This capability allows

the Army to effectively manage operations at any level desired, further “*discretizing*” the sustained flow of capabilities.

These two ERP capabilities are vital to achieving an integrated management system—all of the data about combat units, their readiness, the status of their assets, etc. are consolidated in one structure, in one place. Furthermore, a wealth of information about those units can be provided out of a single technology platform—information that is derived from data routinely input at thousands of locations throughout the Army and reflecting all functional domains.

The benefit of being able to manage every and all authorizations, as well as the specifically identified item of equipment or actual person, is profound—such a capability eliminates the need to measure parametrically or to sample in order to determine some characteristic of the assets comprising the combat unit. Thus, instead of having to use a unit’s BOG/Dwell ratio as a surrogate, the Army can determine the BOG/Dwell by grade, specialty, gender, etc., discretely, by attribute. Furthermore, by consolidating the data, the Army can determine the readiness of any of its combat forces within seconds instead of weeks.

4 ERP Implementation Strategy

4.1 Implementation Approach

There are two different approaches to architecting and implementing ERPs, waterfall and incremental.

IT programs in the Army have traditionally used formal management processes to acquire or develop and operate a system, emphasizing considerable planning and start up efforts. Work is organized by a few phases, separated by decision points. This approach is frequently referred to as a “waterfall model.” The waterfall model contains several erroneous assumptions that can negatively impact ERP implementation projects:

- *Planning* – It is not humanly possible to produce a plan or complete architecture so that its implementation is merely a matter of executing a defined set of tasks
 - Plans for complex projects rarely turn out to be good enough for this to occur
 - Unanticipated problems are the norm rather than the exception.
- *Change* – It is not possible to protect against requirements changes.
- *Stability* – Management usually wants a plan to which it can *commit*. By making this commitment, they give up the ability to take advantage of fortuitous developments in the business and technology environment. Deferring decisions to take advantage of new information and new opportunities is rarely taken into account on IT projects.

Instead of the waterfall model, ERP implementation could proceed in increments, conforming to the architecture and the existing configuration. Solution delivery should be:

- *Incremental, Iterative, and Evolutionary* – allowing adaptation to both internal and external events;
- *Modular and Lean* – allowing components of the process to come and go depending on specific needs of the participants and stakeholders;

- *Time Based* – built on work cycles, which contain feedback loops, checkpoints, and guidance on using this information in the next cycle³.

4.2 Role of BTP and BSA&TP

Judicious use of the ERP solution architecture enables the Army to “build out the city,” neighborhoods, or buildings while maintaining the holistic integrity of the city plan. Starting with the foundation materials coming out of solution manager and focused on capabilities identified in the business transformation plan (BTP), the business systems architecture and transition plan (BSA&TP) can be defined in detail, incrementally, or on an as-needed basis.

5 Conclusion

Well-executed ERP strategy can (and should) play a major role in providing an integrated management system that transforms the way the Army manages its business operations. Like other organizations that have successfully implemented a world-class integrated management system, the Army must leverage its profound investment in ERP platforms as an enabling technology that provides a foundation for execution of its operating model. In short, a well-executed ERP strategy provides a single digitized platform for an enterprise-wide integrated management system.

³ Agile Project Management Methods for ERP: How to Apply Agile Processes to Complex COTS Projects and Live to Tell About It, Glen B. Alleman, In *Extreme Programming and Agile Methods: XP/Agile Universe 2002*, pp. 70–88, Springer Verlag